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ML-based Particle Flow for CLD

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We present an ML-based particle flow algorithm for the CLD detector. Particle candidates are built from hits and fitted tracks, which are represented as a graph. A geometric graph neural network is then trained using object condensation loss to reconstruct a set of particle candidates from the hits and tracks. In the second step, additional heads are used to estimate the energy and momentum of the candidates. Our algorithm improves over the baseline in terms of efficiency and energy resolution. We demonstrate the effectiveness of the approach using a dataset of 10-15 collimated particles resembling a jet at reconstructing their mass.

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